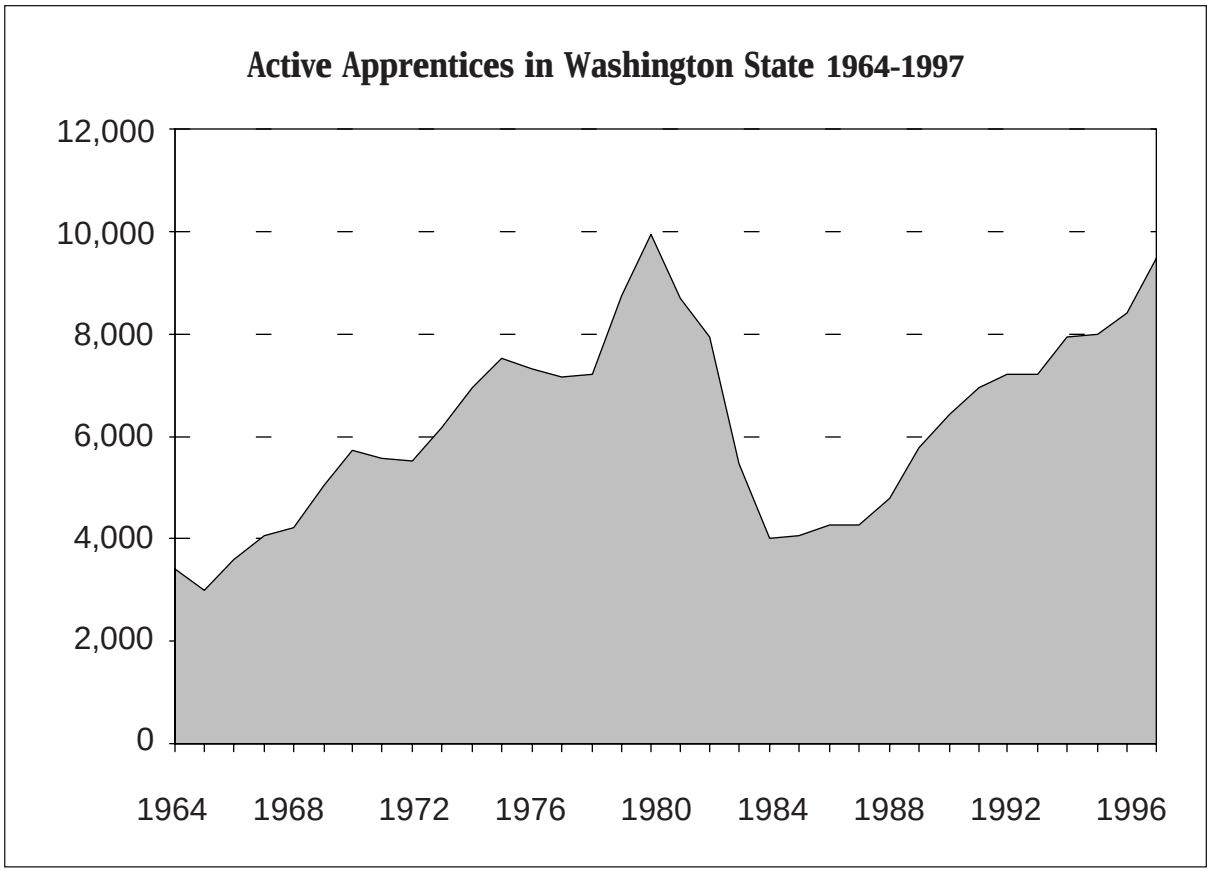
Studies in Industry and Employment

Apprenticeship in Washington: Effective, Underutilized



Washington State Employment Security
Labor Market and Economic Analysis Branch
Carver Gayton, *Commissioner*
September 1998

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Executive Summary

- To date, nearly 120,000 individuals have completed apprenticeship programs in Washington since the program's inception in 1939. Nearly 9,500 individuals were actively enrolled in the state's apprenticeship program in 1997.
- Apprenticeships are very rigorous and highly structured programs with specific academic and work training requirements that take 3 to 5 years to complete. Though the cancellation rate can be high, the end product is a highly skilled individual who has mastered a trade or craft.
- Washington's apprenticeship program was recognized as the most effective job training program in the state in a formal survey evaluation conducted in 1998 by the Workforce Training and Education Coordinating Board.
- Apprenticeship has been endorsed by Washington's business and labor organizations and school administrators as an effective means of producing well-trained, highly-skilled workers for the labor market. Getting individual employers, workers, and teachers to buy in has been more challenging.
- Though identified as an effective job training tool by the Workforce Training and Education Coordinating Board, apprenticeship was not subsequently identified by the board as a tool to address ongoing labor and skill shortages and training needs, perhaps due to its current lack of broad-based appeal and application.
- Though Washington's apprenticeship program is predominantly traditional trade and craft occupations, there are no statutes or regulations restricting apprenticeship to those categories.
- A broad application of apprenticeship has been hindered by several misperceptions: (1) that it is only for trade and craft occupations, (2) that it is only for non-college bound students, and (3) that it is only for union members—none of which are true.
- Individual business endorsement of apprenticeship is hindered by a lack of consensus on the need for training, the state of the economy, direct costs, political views, and deference toward academic credentials.
- Organized labor's endorsement of apprenticeship has been strong, though the debate over flexible multi-skilled swing workers versus single-craft journey level workers has caused some tension and cost some support.
- Endorsement of apprenticeship in education circles has been stymied by traditional attitudes and practices on the part of educators and parents who view all students as college material.
- Apprenticeship is caught in a "vicious cycle." It can't expand beyond traditional trades until employers with non-trade positions use the program; however, employers with non-trade positions will not use the program due to their belief that apprenticeship is for traditional trades.
- Washington's School-to-Work initiative proposes to introduce all students—non-college bound and college bound alike—to the world of work and basic skills. The challenge will be to make the program fully inclusive instead of focusing only on non-college bound students.
- Since pre-apprenticeship is one of the components of School-to-Work, the broad-based application of School-to-Work could broaden the appeal of and reduce the misconceptions about formal apprenticeship programs. However, School-to-Work will have to overcome some of the same misconceptions.
- In order for the effectiveness of apprenticeship to be transmitted broadly, the program must receive the resources necessary to manage both the administrative process and program promotion. Promotion is critical to changing the image of apprenticeship as exclusive to non-college educated individuals interested in traditional building trades.

The Right Tool for the Job?

In a biennial report entitled, Workforce Training Results: An Evaluation of Washington State's Workforce Training System (July 1998), the Workforce Training and Education Coordinating Board (WTECB) identified the state's apprenticeship program as one of the most effective workforce training programs for adults as revealed in a survey of program participants. The apprenticeship program was compared to programs such as private career schools, community and technical college preparatory training, JTPA Title III (dislocated workers), JTPA Title IIA (adults with barriers to employment), and Adult Basic Skills. This finding was based on participants' ratings of the following *(see Figure 1):*

- Gains in job-specific skill competencies
- Relationship of training to post-program employment
- Participant satisfaction
- Employer satisfaction
- Employment opportunities
- Post-program earnings
- Employer provided training

Seventy-four (74) percent of the participants in the apprenticeship program said their job-specific skills "improved a lot"—the highest rating in that category—with private career schools second at 63 percent. Eighty-five (85) percent of apprenticeship program participants said their training was related to the job they held 9 months after the program. This, too, was tops in the category with JTPA Title II-A second at 75 percent.

Figure 1
Participant Satisfaction with Apprenticeship Program
Source: *Workforce Training Results 1998 (WTECB)*

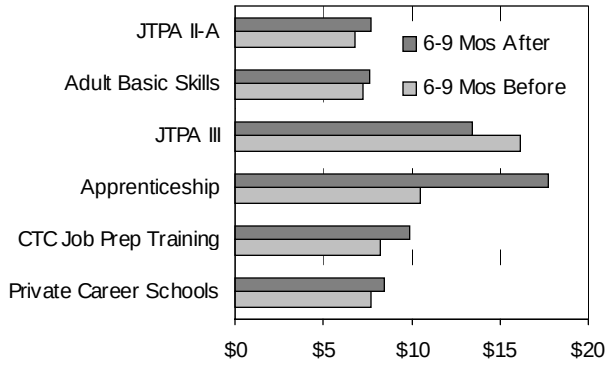
Job-specific skills improved a lot	74%
Training was related to the job held 6 to 9 months after leaving the program	85%
Satisfied with the overall quality of the program	85%
Employed 6 to 9 months after leaving the program	93%

Ninety-three (93) percent of participants in the apprenticeship program reported that they were employed 6-9 months after the program, which was again the highest rating for the category followed by community and technical college preparatory training at 86 percent. Wages tend to be one of the ultimate benchmarks by which effectiveness is determined. The median hourly wage of participants 6 to 9 months before and after their job training programs was documented and apprenticeship programs emerged as having not only the highest wage in absolute terms ($17.68), but also the greatest increase (69 percent) over the period *(see Figure 2)*.

The WTECB's formal assessment tends to be supported by empirical findings, as well as in formal public comments made by the state's principal business and labor organizations, the Association of Washington Business and the Washington State Labor Council, AFL-CIO. All of this raises the question: Since they are so demonstrably effective, why haven't apprenticeships been applied on a broader scale to occupations within which there is identified labor market demand and for which employers lack skilled workers?

The answer may lie partly in the evolution of apprenticeship toward traditional trades, although there is no statutory language restricting its application to each and every occupation. It may lie partly in institutional barriers (education community, political partisanship). It may lie partly in the general public's lack of awareness of apprenticeship generally and perception that appren-

Figure 2
Pre- and Post-Program Median Hourly Earnings
for Adult Job Training Programs
Source: *Workforce Training & Education Coord. Board*



ticeship applies only to union-based occupations. However, in order to address some of these issues, one must first establish what apprenticeship is or is not.

What is Apprenticeship?

Apprenticeship's origins can be traced back to the crafts and trades of Europe during medieval times. Back then, an individual learned a craft or trade under the tutelage and guidance of a skilled craftsman or tradesman and further honed the skill by observing and doing.

Today, apprenticeship is a legally binding job training arrangement within which an individual (or apprentice) combines formal academic instruction (classroom or "seat time") with paid, on-the-job training for a designated number of hours under the supervision of a professional in a trade, art, or business. Apprenticeship programs take between three to five years to complete. The Washington State Apprenticeship and Training Council (WSATC) has statutory and regulatory responsibility for governing apprenticeship and training programs in Washington per *RCW 49.04* and *WAC 296-04* while the Department of Labor and Industries has responsibility for administering the program. At the national level, the U.S. Department of Labor, Bureau of Apprenticeship Training is the federal agency responsible for overseeing apprenticeship program registration, changes in standards, and approval of those changes.

The process for creating an apprenticeship program can unfold or proceed in one of two ways: *committee type apprenticeship program* or *plant apprenticeship program*.

Committee Type Apprenticeship Program. Once the decision is made to create an apprenticeship program within a company, management and labor go about the task of forming a committee of individuals who represent their respective parties. The committee then enters into a two-phase process through which it hopefully will receive approval for its apprenticeship program.

In Phase 1, the group submits a request to the WSATC at its quarterly meeting to be recognized as an approved apprenticeship committee. Supporting documents might also be requested by the WSATC to provide proof of the qualifications, especially with respect to labor representatives, so the WSATC can be confident that qualified individuals are crafting standards and overseeing the program. If disapproved, the committee has the option of responding to issues raised by the WSATC and resubmitting the request for approval at a future quarterly meeting of the WSATC. If approved, the now officially recognized committee enters Phase 2.

In Phase 2, the committee goes about the task of crafting the academic and workplace training criteria. The *academic* requirements average 144 credit hours per year from a list of courses or curriculum approved by the State Board for Community and Technical Colleges. The *workplace* training requirements vary from occupation to occupation, but are usually based on the average number of hours on record for the same occupation already apprenticed (e.g., carpenters require 8,000 hours). If the apprenticeship does not exist elsewhere in the state and there is no record, the committee usually bases its requirement on the records of the U.S. Bureau of Apprenticeship and Training. Once finalized, the agreement is submitted to the WSATC at another of its quarterly meetings for approval. If disapproved, the committee has the option of responding to the issues raised by the WSATC and resubmitting the standards for approval at a future quarterly meeting of the WSATC. If approved, the committee can take the approved criteria and standards back to the company and start implementing its apprenticeship program.

The entire process, which can take as little as six months, usually involves the services of a regional coordinator from the Department of Labor and Industries' Apprenticeship Program who serves as a consultant to the apprenticeship committee throughout the process.

Plant Apprenticeship Program. If a decision is made to create an apprenticeship program within a company and it is determined that apprenticeship status does not exist for the occupation sought to be apprenticed, the management-labor group can skip Phase 1 and proceed directly to Phase 2. In other words, the entire process can be accomplished in one quarterly meeting of the WSATC. Again, however, there must be what is called an open market situation; that is, the occupation cannot be currently apprenticed. A regional coordinator from the Department of Labor and Industries' Apprenticeship Program serves as a consultant to this process as well.

All apprenticeship programs with five or more apprentices must participate in an annual review called an affirmative action/compliance review to ensure that they meet the standards set forth in their agreements. The findings from this review are submitted to the Department of Labor and Industries' Apprenticeship Program. If issues are uncovered, a letter goes out to the committee from the Department with the former given 60 days to respond by outlining the steps to be taken to remedy the situation. If a response is not received within 60 days, the Department can request that the WSATC decertify that company's apprenticeship program. Furthermore, a company apprenticeship program can go before the WSATC at its quarterly meetings with updates or revisions to its standards or criteria.

The process outlined above ensures that apprenticeships are, without question, very rigorous and highly structured. Indeed, several studies have shown that apprenticeship programs combine classroom instruction and on-the-job training to a greater extent than other types of job training and that apprentices experience more intensive training than those in other job training programs, averaging about 27 hours per week (*Monthly Labor Review*, August 1993). Furthermore, the intense program requirements have largely been responsible for an average historic cancellation rate of 16 percent over a period from 1964-97. That's one out of every six participants. On an individual yearly basis, the lowest cancellation rate was 9 percent (1991) while 24 percent was the highest (1983). As program officials themselves point out, apprenticeship is clearly not for everyone. Business and labor organizations alike, however, endorse the concept of apprenticeship because the rigorous program ensures that the end product is a certifiably skilled apprentice who has mastered a trade or craft.

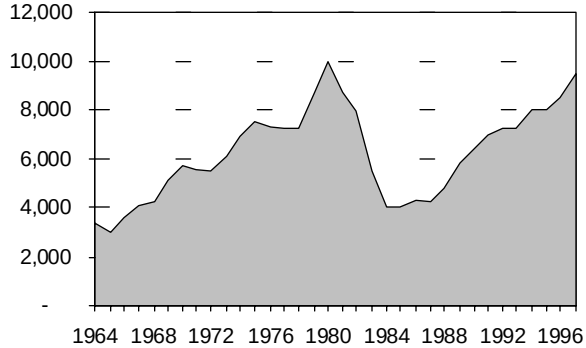
Apprenticeships are not synonymous with formal on-the-job training programs (as distinguished from more general training offered by employers). On-the-job training programs may be customized to meet the needs of individual employers much like formal apprenticeships; however, the WSATC has ruled that they cannot be established if a formal apprenticeship program is already in place. Furthermore, an on-the-job training program requires 2,000 hours or less of employment for completion and the program is approved by the worker's supervisor and not the WSATC, though the program is subject to review by the WSATC.

Apprenticeship in Today's Labor Market

Since its inception nearly 60 years ago (1939), nearly 120,000 individuals have completed Washington's apprenticeship program. Nevertheless, on an annual basis, it is clear that the number of apprenticeships in the state is small. The same is true for apprenticeships nationally. Because of its limited scope, apprenticeship training is not a major mode of initial training for high school graduates in the United States. Indeed, study after study has shown that apprenticeships constitute less than one-half of 1 percent of the U.S. work force. In Washington, the share is consistent with the national picture with roughly 9,500 apprentices constituting less than four-tenths of 1 percent of the state's more than 2.5 million nonfarm workers in 1997. For comparison purposes, it is noted that apprentices account for 6.5 percent of Germany's work force. Apprenticeship is clearly not used as much in the U.S. as it is in Germany or, for that matter, other European nations and Japan.

Historic data on Washington apprenticeships from 1964-97 show that the number of active apprentices rose to a high of nearly 10,000 in 1980 before contracting severely thereafter (it bottomed out at 3,980 in 1984) and then began its rebound to where it was last reported in 1997 *(see Figure 3)*. During that period, apprenticeships accounted for as much as 0.62

Figure 3
Active Apprentices in Washington State
1964-1997
Source: *Workforce Training & Education Coord. Board*



percent of Washington's nonfarm employment base in 1980 and as little as 0.23 percent in 1987. One thing this trend underscores is that apprenticeship positions are greatly impacted by both cyclical and structural forces. This is not surprising given the high concentration of traditional construction and manufacturing trades among apprenticeships.

Apprenticeships clearly respond to economic trends. How responsive, though, are they to *labor market* trends? Statewide occupational projections generated by the Employment Security Department, specifically the 1993-98 projections, were selected as the base data. The 1993-98 period was selected because it represents a major source of employment forecast information that would have been available to apprentices beginning programs in 1993 (and finishing in 1997). Put another way, how closely did the occupational composition of apprenticeship completers in 1997 match what forecasters were expecting the occupational demand to be when they began?

A review of the occupational categories within which the apprenticeship program had the largest number of completers in 1997 suggests that the process of linking apprenticeships to occupational projections (demand) was somewhat "hit and miss" *(see Figure 4 on the next page)*.

On one hand, the apprenticeship program graduated 103 carpenter apprentices to journey level status in 1997. At the time those individuals were enrolling in the apprenticeship program, Employment Security was projecting an annual growth rate of 1.7 percent for carpenters over the 1993-98 period, which translated into 2,669 openings. Given the strong growth anticipated in the sector, this constituted a good match. Indeed, there is much empirical evidence that the construction industry, for one, boosted its apprenticeship programs in response to the demand for labor in the midst of a residential, commercial, and public works building boom, particularly in the central Puget Sound region.

On the other hand, the 1997 class also had 120 completers (the largest group of completers) in a category called All Other Communications Equipment Mechanics. This sector was projected to decline at an annual rate of 1.8 percent, which translated into a loss of 109 positions. This constituted a poor match. A number of occupations were projected to have strong growth and annual openings (e.g., secretaries, except legal and medical; automotive mechanics; janitors and cleaners, childcare workers, teachers aides; general laborers). However, the apprenticeship program graduated only a handful of individuals in these areas. While those who completed their apprenticeship programs in these categories were almost surely snapped up in the job market, their sparse number represented a forgone opportunity for the apprenticeship program to respond to labor market demand.

The last point, however, should not be understated. That apprenticeship completers were almost surely snapped up in the job market even when graduating into an occupation projected to decline in the broader labor market demonstrates that the apprenticeships are responsive, at the very least, to the labor market needs of *specific* employers. That, ultimately, is the bottom line and the practical benefit of apprenticeships to employers.

So what is the proportion of apprenticed tradesmen to non-apprenticed tradesmen? Is there some tangible benefit to being apprenticed? As illustrated in *Figure 1*, there is certainly an economic benefit. From an employment or employability standpoint, the advantage is less clear, at least for the worker. While there is no specific database that tracks this relationship, there are many, many more non-apprenticed trade workers than apprenticed trade workers. The number of apprentices is dwarfed by the occupational count. Among the more than 50 apprenticed occupations that generated completers in 1997, the base employment in 1996 was nearly 333,000. There were only 8,446 apprentices in 1996, which translated into 2.5 percent of the total labor market presence of workers in 50 apprenticed occupations that year. The relationship, clearly, was not even close.

Given the weight of statistical evidence documenting the relatively insignificant impact of apprenticeship on the state's labor market and economy, why the interest? The interest is not driven by what apprenticeship represents in terms of numbers but, rather, by what many believe it represents as a job training concept or strategy with the potential to be applied more broadly.

(Continued page 6)

Figure 4
1993-98 Occupational Projections vs. 1997 Apprenticeship Program Completers
Source: *Employment Security Department, LMEA, and Labor and Industries, Apprenticeship Program*

Occupational Title	1993	1998	Total Growth	Annual Growth	Annual Growth	Annual Replace	Annual Openings	Apprenticeship Completers
All Other Communication Equip. Mechanics	1,228	1,119	-109	-1.8%	-22	20	20	120
Carpenters	31,709	34,378	2,669	1.7%	534	536	1,070	103
Plumbers, Pipefitters, Steamfitters	9,340	10,006	666	1.4%	133	201	334	85
Fire Fighters	5,350	6,223	873	3.3%	175	163	338	84
Sheet Metal Workers	4,254	4,396	142	0.7%	28	140	168	68
Electric Powerline Installers/Repairers	1,652	1,724	72	0.9%	14	51	65	62
Tapers	2,170	2,319	149	1.4%	30	28	58	54
All Other Helpers, Laborers, Movers	28,481	29,661	1,180	0.8%	236	293	529	33
Teachers Aides, Paraprofessionals	11,144	12,709	1,565	2.8%	313	140	453	33
Operating Engineers	2,882	3,158	276	1.9%	55	37	92	22
Brick Masons	1,229	1,313	84	1.4%	17	23	40	21
Roofers	3,267	3,498	231	1.4%	46	39	85	18
Millwrights	1,818	1,822	4	0.0%	1	55	56	17
Pruners	2,542	2,709	167	1.3%	33	59	92	16
Concrete and Terrazzo Finishers	2,102	2,214	112	1.1%	22	72	94	15
Secretaries, Except Legal and Medical	44,974	50,386	5,412	2.4%	1,082	1,034	2,116	15
Painters and Paperhangers	10,098	11,316	1,218	2.4%	244	195	439	15
Machinests	6,857	7,369	512	1.5%	102	173	275	14
Butchers and Meat Cutters	2,653	2,687	34	0.3%	7	78	85	13
Heating, A/C, Refrigeration Mechanics	3,972	4,362	390	2.0%	78	39	117	13
All Other Machinery Mechanics	4,742	5,136	394	1.7%	79	98	177	12
Corrections Officers and Jailers	4,039	4,945	906	4.5%	181	42	223	11
Hard Tile Setters	428	458	30	1.4%	6	9	15	10
Bus, Truck, Diesel Engine Mechanics	5,180	5,841	661	2.6%	132	140	272	9
Automotive Mechanics	12,894	14,869	1,975	3.1%	395	373	768	9
Pile Driving Operators	29	31	2	1.4%	---	---	---	8
Machine Tool Cutting Operators, M.P.	815	750	-65	-1.6%	-13	10	10	8
Floor Layers, Except Carpet	610	733	123	4.0%	25	12	37	7
Glaziers	1,313	1,426	113	1.7%	23	27	50	5
Boilermakers	329	341	12	0.7%	2	11	13	5
Janitors and Cleaners	35,482	39,793	4,311	2.4%	862	834	1,696	4
All Other Construction Workers	3,021	3,303	282	1.9%	56	34	90	4
Plasterers	268	281	13	1.0%	3	5	8	4
Machinery Mechanics, Water/Power	519	583	64	2.5%	13	11	24	3
Child Care Workers	18,635	23,069	4,434	4.8%	887	153	1,040	3
Tool and Die Makers	2,694	2,458	-236	-1.8%	-47	74	74	3
All Other Material Moving Operators	3,498	3,885	387	2.2%	77	29	106	2
Jewelers and Silversmiths	729	928	199	5.5%	40	24	64	2
Lathers	140	149	9	1.3%	2	2	4	2
Opticians, Dispensing and Measuring	1,356	1,783	427	6.3%	85	38	123	2
Powerhouse and Relay Engineers	25	26	1	0.8%	---	---	---	2
Electric Meter Installers/Repairers	227	252	25	2.2%	5	5	10	2
Woodworking Machine Operators	746	766	20	0.5%	4	23	27	2
Ceiling Tile Installers	264	271	7	0.5%	1	4	5	2
Cabinetmakers and Bench Carpenters	3,078	3,475	397	2.6%	79	119	198	1
Water and Waste Treatment Plant Operators	1,169	1,376	207	3.5%	41	34	75	1
Welders and Cutters	6,401	6,860	459	1.4%	92	147	239	1
Painters, Transportation Equipment	1,158	1,134	-24	-0.4%	-5	37	37	1
Insulation Workers	2,238	2,366	128	1.1%	26	114	140	1
Emergency Medical Technicians	2,130	2,566	436	4.1%	87	14	101	1
Structural Metal Workers	838	893	55	1.3%	11	17	28	1
Power Generating Plant Operators	206	235	29	2.8%	6	5	11	1
Stationary Engineers	611	615	4	0.1%	1	21	22	1

Big Worker Impact, Small Workforce Impact

In its report entitled *Supply, Demand, and Gaps* (1998), the Workforce Training and Education Coordinating Board (WTECB) found that there is a shortage of skilled workers and that it has grown more acute during this period of continued economic growth. It also found that the most severe shortage is for workers with post-secondary vocational diplomas or certificates. It was further discovered that despite the acute labor shortage, most employers do not provide even four hours of classroom training a year to the majority of their production or service workers. These findings were consistent with those made earlier in an Employment Security Department report entitled, *Labor and Skill Shortages in Washington State*: *Findings from the LMEA Supply-Demand Survey* (September 1997).

The WTECB articulated a number of strategies to close the gap. On the education side, it proposed education reform, school-to-work, and vocational education. On the training side, it proposed compressed adult vocational training, job-linked training, and one-stop career centers. Apprenticeships, ironically, were not cited in the report at all despite having been identified in the *Workforce Training Results: An Evaluation of Washington State's Workforce Training System* report as one of the most effective workforce training programs in the state. Apprenticeships might reasonably be expected to fall under the category of job-linked training. That strategy, however, focused specifically on dislocated workers, underutilized, and underrepresented populations and not on the labor force in general.

Intentional or not, the WTECB made a statement about apprenticeships by omitting it from the list of strategies recommended for addressing the state's labor and skill gaps. This needs to be clearly distinguished from its statement about apprenticeship specifically which, again, found apprenticeship to be a very effective job training program. What the WTECB omission underscored was the practical limit of applying such a small program—however effective—to such a large, statewide issue. In other words, apprenticeship is an effective program, but insufficiently large enough in scope or coverage to create meaningful impact in terms of numbers. There are real obstacles and concerns related to apprenticeship and they emanate from many corners.

For apprenticeship to have a substantive impact on Washington's work force, it would have to measure up in two ways: numbers and responsiveness. As demonstrated earlier, the program was too small and limited to have a marked impact on the work force, and also had mixed results with respect to meeting anticipated labor market demand.

Among what are projected by the Employment Security Department to be the 40 fastest growing occupations in terms of absolute number from 1996-2006, seven are currently apprenticed *(see Figure 5 on the next page)*: helpers and laborers, janitors and cleaners, child care workers, carpenters, non-legal and non-medical secretaries, auto mechanics, and teachers aides. These seven occupations alone are expected to account for roughly 9,000 openings by 2006. In 1997, these seven occupations graduated a combined total of 200 apprentices. Were they to graduate the same number of apprentices each year for the next ten years (through 2007), they would still accommodate only a fifth to a quarter of the anticipated labor market demand. Moreover, the greatest number of jobs are expected to be generated in what are currently non-apprenticed retail occupations, restaurant occupations, high tech occupations, education-related occupations, and others. The Top 40 occupations are expected to generate 60,300 total openings by 2006. Apprenticeships could conceivably be applied to 9,000 of those openings, but not to the balance of 51,300 openings.

Among what are expected to be the 40 fastest growing occupations in terms of annual rate of growth over the 1996-2006 period, three are currently apprenticed *(see Figure 6 on page 8)*: emergency medical technicians (8.6 percent), child care workers (8.3 percent), and corrections officers (7.8 percent). The listing, however, also revealed a concentration of high technology and health care occupations. Among the high tech occupations listed in the Top 40 were computer scientists, computer engineers, database administrators, systems analysts, computer support specialists, electronic semiconductors workers, precision assemblers,

(Continued page 9)

Figure 5
Fastest Growing Occupations in Washington, Total Openings
1996-2006
Source: *Employment Security Department, LMEA*

Occupational Title	1996	2006	Open Growth	Open Replace	Open Total	Growth Rate	Appren-ticed
Salespersons, Retail	92,902	117,721	2,482	2,949	5,431	4.8%	
Cashiers	58,643	72,997	1,435	2,556	3,991	4.5%	
Combination Food Preparation/Serv Workers	42,743	51,692	895	2,181	3,076	3.9%	
Waiters and Waitresses	39,377	46,441	706	2,010	2,716	3.4%	
General Managers and Top Executives	59,807	72,306	1,250	1,271	2,521	3.9%	
General Office Clerks	65,145	74,798	965	1,483	2,448	2.8%	
Managers and Administrators, NEC	55,619	65,101	948	1,184	2,132	3.2%	
Food Preparation Workers	23,540	30,762	722	1,201	1,923	5.5%	
Marketing/Sales Supervisors	51,901	60,944	904	833	1,737	3.3%	
Helpers and Laborers, NEC	31,432	37,480	605	1,058	1,663	3.6%	X
Janitors and Cleaners	37,998	46,818	882	770	1,652	4.3%	X
Child Care Workers	26,913	40,058	1,315	299	1,614	8.3%	X
Teachers, Secondary School	28,508	35,948	744	849	1,593	4.7%	
Teachers, Elementary	30,872	39,140	827	590	1,417	4.9%	
Hand Packers and Packagers	22,131	29,510	738	590	1,328	5.9%	
Registered Nurses	37,269	45,283	801	515	1,316	4.0%	
Reception/Information Clerks	28,151	36,074	792	522	1,314	5.1%	
Carpenters	37,751	43,664	591	668	1,259	3.0%	X
Stock Clerks, Stockroom/Warehouse	15,624	25,729	1,011	231	1,242	10.5%	
Computer Engineers	10,932	22,443	1,151	74	1,225	15.5%	
Systems Analysts	14,028	25,295	1,127	96	1,223	12.5%	
Clerical Supervisors	25,947	32,004	606	601	1,207	4.3%	
Maintenance Repairers, General Utilities	26,915	33,454	654	545	1,199	4.4%	
Secretaries, Except Legal or Medical	45,649	48,983	333	794	1,127	1.4%	X
Bookkeeping, Accounting, Audit Clerks	54,604	55,711	111	920	1,031	0.4%	
Professional, Paraprof., Technicians, NEC	22,570	27,216	465	555	1,020	3.8%	
Farm Workers, Food and Fiber Crops	42,201	40,581	-162	1,163	1,001	-0.8%	
Truck Drivers, Heavy	33,663	38,937	527	470	997	3.0%	
Sales Representatives, NEC	23,967	27,913	395	567	962	3.1%	
Nursing Aides and Orderlies	21,411	27,763	635	289	924	5.3%	
Automotive Mechanics	18,082	22,398	432	472	904	4.4%	X
Truck Drivers, Light	23,515	29,023	551	328	879	4.3%	
Counter Attendants, Lunchroom	8,065	9,918	185	633	818	4.2%	
Accountants and Auditors	22,169	25,773	360	455	815	3.1%	
Cooks, Restaurant	16,575	20,570	400	395	795	4.4%	
Service Supervisors, NEC	18,746	22,199	345	447	792	3.4%	
Computer Scientists, NEC	4,168	11,598	743	28	771	22.7%	
Freight/Stock/Movers, Hand, NEC	13,459	16,160	270	485	755	3.7%	
Teacher Aides, Paraprofessionals	19,174	24,166	499	254	753	4.7%	X
Guards	12,214	17,153	494	255	749	7.0%	

Figure 6
Fastest Growing Occupations in Washington, Annual Growth Rate
1996-2006
Source: *Employment Security Department, LMEA*

Occupational Title	1996	2006	Open Growth	Open Replace	Open Total	Growth Rate	Appren-ticed
Computer Scientists, NEC	4,168	11,598	743	28	771	22.7%	
Electronic Pagination System Workers	597	1,231	63	9	72	15.6%	
Computer Engineers	10,932	22,443	1,151	74	1,225	15.5%	
Personal/Home Care Aides	4,175	7,904	373	76	449	13.6%	
Database Administrators	1,069	1,971	90	21	111	13.0%	
Systems Analysts	14,028	25,295	1,127	96	1,223	12.5%	
Paralegals	2,439	4,330	189	22	211	12.2%	
Coil Winders, Tapers/Finishers	117	205	9	2	11	11.9%	
Computer Support Specialists	4,032	6,917	289	27	316	11.4%	
Plastic Molding Machine Setters	522	894	37	15	52	11.4%	
Electronic Semiconductors	1,100	1,880	78	21	99	11.3%	
Stock Clerks, Stockroom/Warehouse	15,624	25,729	1,011	231	1,242	10.5%	
Directors, Religious Activities/Education	1,122	1,836	71	21	92	10.4%	
Physical/Correction Therapy Assistants	1,915	3,045	113	43	156	9.7%	
Precision Assemblers, NEC	974	1,523	55	19	74	9.4%	
Therapists, NEC	387	602	22	4	26	9.2%	
Music Directors/Singers/Rel	1,734	2,689	96	24	120	9.2%	
Respiratory Therapists	1,260	1,946	69	14	83	9.1%	
Human Services Workers	2,863	4,414	155	52	207	9.0%	
Medical Assistants	4,427	6,762	234	86	320	8.8%	
Demonstrators, Promoters, Models	2,596	3,948	135	69	204	8.7%	
Occupational Therapy Assistants	200	303	10	4	14	8.7%	
Medical Records Technicians	2,301	3,480	118	45	163	8.6%	
Emergency Medical Technicians	2,592	3,910	132	50	182	8.6%	X
Engineer/Math/Natural Science Managers	6,373	9,579	321	135	456	8.5%	
Comb. Machine Tool Operators/Tenders	461	689	23	8	31	8.4%	
Engraving and Printing, Hand	481	718	24	12	36	8.3%	
Child Care Workers	26,913	40,058	1,315	299	1,614	8.3%	X
Numerical Control Machine Operators	1,625	2,412	79	29	108	8.2%	
Bill and Account Collectors	4,131	6,117	199	85	284	8.2%	
Electrical/Electronic Assemblers	3,108	4,580	147	65	212	8.1%	
Electric Home Appl./Power Tool Repairers	1,059	1,555	50	26	76	8.0%	
Cardiology Technologists	210	308	10	4	14	8.0%	
Adjustment Clerks	4,814	7,040	223	29	252	7.9%	
Correction Officers	4,414	6,428	201	67	268	7.8%	X
Paving/Surfacing/Tamping Operators	1,349	1,957	61	30	91	7.7%	
Residential Counselors	4,318	6,264	195	98	293	7.7%	
Ushers/Lobby Attendants/Ticket Takers	1,239	1,791	55	23	78	7.6%	
Instructors and Coaches, Sports	8,248	11,921	367	75	442	7.6%	
Physical Therapists	2,658	3,807	115	29	144	7.4%	

and electric/electronic assemblers. Health care occupations included among the Top 40 were personal and home care aides, physical therapy assistants, therapists, respiratory therapists, medical assistants, occupational therapy assistants, medical records technicians, emergency medical technicians, cardiology technologists, and physical therapists. It is precisely forecast information like this that has the state apprenticeship program looking to expand into these occupational areas in the future (see *Beta Testing Apprenticeship in High Tech*).

Beta Testing Apprenticeship in High Tech

One of the stated values of the WSATC is that it "assesses the potential for apprenticeship opportunities in new and emerging occupations and technologies." This is important not only because of the significant impact that high technology industries and jobs have on the state's economy, but also because of the acute labor and skill shortages documented in this industry (*Labor and Skill Shortages in Washington: Findings from the LMEA Demand-Supply Survey*, September 1997).

What the apprenticeship program's value statement brings to the fore is the convergence of two disparate trends. On one hand, there is the potential promise of an apprenticeship system for high tech that can respond not only to the current labor and skill shortage, but also to the ongoing concern over skill obsolescence. The latter concern ties in with some criticisms leveled against higher education: (1) that classroom-based programs do not allow the customization of skills demanded by high tech employers, (2) that the life cycle of a particular technology is so short that skills are obsolete by the time students graduate in two to four years, and (3) that learning is more theory than application. There is, of course, opposition. The higher education community has worked hard to establish the standards for credentialing in the high tech field. The real question, though, is whether or not those skill needs of the high tech industry require such credentialing at all, or if apprenticeship certificates of mastery can suffice.

This issue may also test the resolve of organized labor. It has been said that unions have had a difficult time organizing white-collar, high tech workers because they have no traditional base in the services industry. At the same time, high tech workers are known to be wary of confrontational labor-management relations and the perception of unions as blue-collar in nature. It will be interesting to see if organized labor is up to the challenge of extending apprenticeship into the high tech industry with little or no promise of organizing this potential new breed of apprentices. The same case could surely be made for almost any other non-trade occupation, but high tech occupations appear to be those with the highest demand as well the greatest resistance to cyclical downturns.

As noted previously, nowhere in the mission or values of Washington's apprenticeship program is it stated that the program is dedicated to providing highly skilled workers to meet the labor market demands of only traditional trades. Nevertheless, that is how the program has evolved. With very few exceptions, non-trade occupations are absent from the apprenticeship arena regardless of labor market demand. By all accounts, the program has worked exceptionally well at developing skilled craft and trade workers. The question remains as to why this model has not been applied to non-trade occupations within which there are labor shortages.

High tech occupations have been mentioned in apprenticeship circles because it can be a rapidly shifting and evolving field to the extent that a rigid, drawn out education is a risk rather than a benefit. In the two to four years it takes to acquire an Associate of Science or Bachelor of Science degree, respectively, a specialization can be rendered obsolete. Continuous training and skill upgrading is mandatory in high tech if one hopes to survive, let alone succeed. Faced with an acute labor and skill shortage, the state's high tech industry is starting to eye apprenticeship as a potential strategy for addressing the need for highly skilled, well-trained workers with strong academic foundations and work experience.

Therein lies the ultimate challenge for the apprenticeship program and its supporters. Indeed, it is the very situation within high tech—a situation presumably ripe for application of an apprenticeship program—that may determine whether or not apprenticeship will ever truly be an effective and responsive strategy for addressing labor market demand for non-trade occupations.

The WSATC has taken up that challenge by directing program staff to expand apprenticeship into fast-growing and emerging industries like health care, biotechnology, and high tech.

Directives from the WSATC aside, a couple of business-education initiatives already underway have fundamental approaches to producing high-skilled workers for the information technology industry that are consistent with the apprenticeship approach and, therefore, may provide an opportunity for partnerships or engender understanding and acceptance of apprenticeships.

High Tech Prep. One prominent example of Tech Prep's response to the growing labor and skill needs of the region's high tech industry can be found in the Northeast Tech Prep Consortium. This consortium represents a partnership between four community and technical colleges—Bellevue Community College, Shoreline Community College, Edmonds Community College, and Lake Washington Technical College—and nine surrounding public school districts. The Tech Prep program run by the consortium is similar to other Tech Prep programs except for the fact that chief among its offerings is *Information Technology*. This program is part of the High Tech Learning Center (HTLC) sponsored by the North East Vocational Area Cooperative (NEVAC), which is one of the consortium members.

Curriculum at HTLC is driven by industry standards and is constantly kept up to date. Among the specific technologies that students can access at HTLC are multimedia applications, Internet web authoring, programming (Visual Basic, C, C++), networking, industry certification (based on standards used by Microsoft, Adobe, and others), and Boeing's Manufacturing Engineering curriculum. Furthermore, internship and pre-apprenticeship work-based learning programs are fully incorporated into those standards, as are mentoring and job shadowing. This program component was a direct response to labor market demands from an industry that dominates the consortium's service delivery area—information technology (there are 1,600 high tech companies within a 30-mile radius of NEVAC's headquarters). HTLC aims to go statewide and nationwide in the future as *Distance Learning* and *Cyberschool* concepts are implemented.

Still under negotiation is a possible articulation agreement between the community and technical colleges and the University of Washington. An articulation agreement recognizes that classes at the former are sufficiently rigorous to be accepted for credit at the latter. This would extend the current "2+2" program between high schools and community and technical colleges into a "2+2+2" program, creating a seamless transition from the final two years of high school to a community or technical college to the final two years of a university program. If this happens—and that is still a big "if"—it would probably go far toward enhancing the attractiveness and marketability of the Tech Prep program.

Information Technology Skill Standards. More than 200 individuals representing the NorthWest Center for Emerging Technologies, Regional Advanced Technology Education Consortium, State Board for Community and Technical Colleges, Washington Software and Digital Media Alliance, and Society for Information Management came together to identify skill standards for the information technology industry workers. The skill standards were divided into *foundation skills* and *workplace competencies*. Foundation skills translate into competent workers who have basic skills (reading, writing, arithmetic, etc.), thinking skills, and personal qualities. Workplace competencies translate into workers who can effectively and productively use resources, interpersonal skills, information, systems, and technology. The result of this collaboration is a document entitled, *Building a Foundation for Tomorrow: Skill Standards for Information Technology*. Though created with the Puget Sound region in mind, it is now being presented to the state's information technology community with hopes that it will eventually be presented to the information technology community nationwide. The collaborative effort has also served as a model for those seeking to establish skill standards for every occupation in the state, not just those in information technology (see *Education Initiatives and Apprenticeships, Education Reform*).

All of this is very consistent with the approach taken by apprenticeship programs; that is, come to agreement on what skills are necessary and what level or standard of competency is needed. The apprenticeship program,

of course, accomplishes this through a combination of academic training and work experience—all with the recognition that developing skill standards is a critical first step in a structured, rigorous process to produce high skilled workers.

Education Initiatives and Apprenticeship

School-to-Work, Tech Prep and Education Reform are examples of current, ongoing initiatives that are transforming K-12 education and making it more responsive to labor market demand. The broadly stated goals and objectives of these initiatives are consistent with those of the apprenticeship program. Ultimately, these education initiatives hold the promise of indirectly promoting the state's apprenticeship program as they become mainstream and their goals and objectives become the standard by which education is measured.

School-to-Work. School-to-Work provides a conceptual framework under which state programs assist students with the transition from school to work through school-based and work-based experiences and connecting activities. School-based learning involves programs based on rigorous academic and skill standards, including instruction in a career major, and career exploration and counseling. Work-based learning involves long- or short-term experiences in a workplace setting (e.g., internships, job shadowing, pre-apprenticeships, etc.). These experiences and activities make up a career pathway that gives students an opportunity to explore career options in different industries and occupations. A form of work-based experience called pre-apprenticeship is one of the components under the School-to-Work umbrella. It is important to discuss School-to-Work because its goals and objectives complement those of the state apprenticeship program, particularly in their shared emphasis on a combination of school and work-based learning.

Congress passed the School-to-Work Opportunities Act (H.R. 2884) in 1994, which provided subsidies to school districts for the purpose of establishing partnerships with local businesses. Many states quickly followed the national lead. That same year, Governor Lowry created, by executive order, the Governor's Council on School-to-Work Transition, a 28-member body of business, labor, education, and government planners. The following year, he created the School-to-Work Task Force to oversee the implementation of a school-to-work program.

These efforts initially arose from national and state level concerns that the country has failed to provide adequate education, training, or employment opportunities for young people who are not college bound. More broadly, STW seeks to effectively move high school graduates into careers that don't require a college degree. However, School-to-Work programs are breaking new ground by encompassing both college bound and non-college bound students and, by extension, both traditional trade and non-trade occupations. In doing so, they are attempting to change public thinking about the linkages between school and work.

STW is envisioned as an "umbrella" for apprenticeship and other related programs. Indeed, if implemented as widely as is anticipated (statewide and nationally), STW may be the program that ultimately casts off the negative perception or image that programs like apprenticeship are only for students who are not college bound. This could also prompt apprenticeship programs to at least look beyond simply trades and crafts. Of course, STW is only in the pilot stages at this point, which means that it may not be of much benefit to employers trying to cope with labor and skill shortages in the current tight labor market. Furthermore, the initial federal seed money is almost used up, which means that state government and private companies will need to step into the void to keep the program going. There is some evidence that that is happening.

Employers, for their part, have stepped up to the plate and are entering the classrooms in unprecedented ways and numbers. Much of this is due to federal and state sponsored School-to-Work programs. According to the federal School-to-Work program, a survey of 45 states showed that in the 18 months ended June 1997, the number of partnerships between high schools and businesses jumped 270 percent to 1,087.

Here in Washington State, the Association of Washington Business and Washington State Labor Council have endorsed STW and have created the Business/Labor Alliance for School-to-Work to forge a collaborative effort targeting young people. On other fronts,

companies are forming partnerships directly with schools in the absence of federal or state funding. In effect, they are dipping into their own pockets to fund these efforts. The driving motivation is a robust economy that is causing acute labor shortages and which is compounded by what many see as a poor skill link between education and work. The Port of Seattle's *Port Project* is one prominent example of a public-private business entity exposing students (and teachers) to the world of work through internships, pre-apprenticeships, site tours, guest speakers, career fairs, and other career-related activities (*Washington CEO*, September 1998). This effort should come as no surprise since Mic Dinsmore, Executive Director of the Port of Seattle, also heads up the state's School-to-Work Task Force.

Of course, the program also has its critics. Those critics are concerned that corporate involvement in education will make getting jobs a higher priority than simply learning. Criticism aside, School-to-Work programs, because of their overall thrust generally and because of their pre-apprenticeship component specifically, should ultimately help to build a national framework for apprenticeship programs. Apprenticeship programs, for their part, should take full advantage of this new educational initiative by partnering directly with School-to-Work programs and using the momentum that School-to-Work may create to expand apprenticeships into non-traditional fields.

Tech Prep. The state's Tech Prep program has actually been in existence longer than School-to-Work. Today, Tech Prep has been implemented by 23 consortia across Washington. These consortia are comprised of educators, business, and labor representatives. Though it has been aimed primarily at students who are not college bound, it is not limited to that group. It gives those students a leg up on the world of work by first exposing them to technical careers during the last two years of high school (11th and 12th grades) and continuing on through the two years of a community or technical college. This is referred to as "2+2." Articulation agreements are what make this happen. They are agreements between high schools and community/technical colleges on classes at the former that are of sufficient rigor to be accepted for credit at the latter. Under this scenario, a graduating senior gets both a high school diploma and a community college or technical college transcript with credits already earned. Efforts are now being made to fully extend the Tech Prep program into a "2+2+2" program; that is, a seamless transition from the final two years of high school to a community or technical college to the final two years of a university program (on a transfer basis). In the case of Seattle community colleges, articulation agreements have already been established with Washington State University and two state colleges, and negotiations are underway with the University of Washington. This would enable students, if they so choose, to continue on with formal education if that became of interest to them during their studies. In other words, the education process remains progressive and intact, hopefully alleviating a common fear of parents and teachers that students will see their possible college track derailed.

According to Pat Cheadle, who oversees School-to-Work and Tech Prep programs for the Seattle Community Colleges District, School-to-Work and Tech Prep face many of the same issues as apprenticeship programs. The key to marketing and promoting the programs, says Cheadle, is to work directly with high school career guidance counselors who often have more influence over students' career choices than do parents. She added that it was also important to get into the classrooms and in front of students to market the programs, and that simply staffing job fair booths was not enough. Paid internships were also critical, she said, students get very interested when they realize that they can be paid to learn while they work. The apprenticeship program already understands this and has only paid apprenticeships. The Seattle Community Colleges District has placed an emphasis on the recruitment of minority women (and women in general) into the program through its sex equity project. This, too, is an objective of the apprenticeship program. Ultimately, the state's apprenticeship program can learn from the efforts of those responsible for implementing School-to-Work and Tech Prep programs.

Education Reform. Education reform is another state initiative whose goals and objectives fit nicely with those of the apprenticeship program. The Education Reform Act of 1993 (ESHB 1209) provided a framework for creating a performance-based public education

system in Washington. One of its goals was to ensure that students, "understand the importance of work and how performance, effort and decisions directly affect future career and educational opportunities." Simply put, it was intended to see that students understand the connection between academic performance and success in the workplace.

Skill standards were the principal goal of education reform. By 2006, students will be expected to meet *Essential Academic Learning Requirements* which encompass reading, writing, communications and mathematics (science will be added in 2008). These skills will be measured by means of standardized tests administered in the 4th, 7th and 10th grades with competency recognized by the awarding of a Certificate of Mastery. This is important to employers because of the problem of new entrants into the work force who have insufficient basic skills. This is a boost for apprenticeships because the program has long focused on the basic skill requirements of apprenticed positions and built formal classroom or academic time into its structured program.

Obstacles to Apprenticeship

Apprenticeship is a proven, effective, job training program that is applicable to virtually any occupation. On paper, it would seem to be a straightforward strategy for addressing the current and future demand for highly trained, highly skilled workers. Yet, the reality is that despite its proven effectiveness, apprenticeships constitute a small number and share of the work force. As noted earlier, effective or not, the number of apprenticeships is small whether one is talking about Washington or the U.S. and study after study has shown that apprenticeships constitute less than one-half of 1 percent of the U.S. work force and less than four-tenths of 1 percent of Washington's work force. The following sections shed light on some of the concerns, fears, and attitudes expressed by the business, labor, and education communities with respect to apprenticeship programs. These factors are believed to be responsible for the currently limited application of apprenticeships in Washington.

Employers

No Consensus on Job Training. It might be argued that the greatest overarching obstacle to apprenticeship—in fact, all job training—is that there is no national consensus on employment-related training in the U.S. This is the converse of the situation in Germany, which is often held up as the apprenticeship model, where there are roughly 400 apprenticed occupations and virtually every citizen receives some type of work experience as part of their standard education. In Germany, the consensus is that training in any field is better than no training at all since the individual is likely to acquire transferable skills. Without such a consensus in the U.S., the prospects for a transfer of the broad-based German apprenticeship model to the U.S.—let alone the prospects for success—are questionable at best.

Another important distinction is governmental structure, which in Europe is more centralized and characteristic of controlled economies than is the case in the U.S. For example, European governments have been known to bring their authority to bear on employers in order to generate apprenticeships. That is unlikely in the U.S. with its more open economy. Private sector representation also differs in Europe. There, craft and trade associations are very strong and hold tremendous influence over members. This is in marked contrast to the U.S. where influence over individual members is relatively weak.

Training is a Low Priority. This underscores another reality: that training is not a high priority for U.S. employers. For example, a report to Congress by the U.S. Office of Technology Assessment (OTA) concluded that, "good training pays off—for the individual worker whose skills are upgraded, for the company seeking a competitive edge, and for the Nation—in overall productivity and competitiveness." Nevertheless, the report found that few U.S. firms use training as part of their competitive strategy, in contrast to competitor firms in Germany and Japan (*Monthly Labor Review*, March 1991). As for the training that does take place, it is unevenly distributed in that 10 to 15 percent of U.S. businesses do the bulk of all the training.

That is changing. The tightest labor market in a quarter century is altering the traditional indifference of businesses toward high school graduates. Until recently, students received little guidance or training on how and where to find work after high school. This is a significant oversight considering that 75 percent enter the work force without higher education degrees.

Economic Timing. The economic business cycle is an important determinant of success or lack of success of apprenticeship programs. In the U.S., for example, apprenticeship programs that had been expanding on the East Coast and parts of California and Texas were brought to a screeching halt by the recession in the early 1990s. As *Figure 3* illustrated, Washington's apprenticeship program was no less shielded from the economic influences as the number of apprenticeship positions fell significantly in the wake of the double-dip recessions from 1980-83 and following the economic slowdown of 1990-91. A similar situation has been unfolding in Germany where the weakening of its apprenticeship program has been brought about by larger problems in the country such as the cost of reunification and global competition. Whether here or abroad, apprenticeship programs thrive when the economy and job creation is strong. Concurrently, apprenticeships are best tailored for industries with current and projected labor shortages. The bottom line is that apprenticeship programs are not a concept that can be sold to the business community simply for the sake of having one. Employers must first identify a need (e.g., labor/skill shortage) to justify making such as costly investment.

Direct Costs. It is estimated that the cost to employers is approximately $10,000 for every individual enrolled in a four-year apprenticeship program. While the final product often proves to have been an excellent investment, apprenticeship is nevertheless an expensive undertaking. Compounding the cost concerns is the fact that there are "competing" job training programs that provide cash incentives to employers—something the apprenticeship program cannot do. These programs originate in agencies like Employment Security (e.g., Job Training Partnership Act), Veterans Affairs (e.g., disabled veterans), and even Labor and Industries (e.g., vocational rehabilitation). For an employer who has training needs and a bottom line to meet, there is strong incentive to pursue programs that provide hard money. The apprenticeship program refers to its benefit as soft money; that is, the monetary benefit employers receive from a proven, effective training that provides almost immediate payback in terms of productivity gains. That, however, remains the harder sell. Taken together, the cost to employers makes them very sensitive to the potential for attracting "free riders."

Free Riders. Apprenticeship programs are expensive to operate. That is why it is recommended that employers—especially small employers—take advantage of state or federally sponsored programs, most of which support employer consortia in order to pool resources and spread the costs. Consortia, however, pose a potential problem in that they require agreements about distributing program costs as well as potential employees. In this respect, such arrangements run up against the reluctance of American businesses to link up with competitors. According to a union-sponsored study, many non-union employers remain reluctant to invest in long-term training because workers could use their skills to win higher paying jobs at competing firms, giving competitors a "free ride" on their training dollar. There is a concern that other companies might even go so far as to raid their work force. However, some studies have shown that the significant investment companies make in their apprentices is usually rewarded with tremendous loyalty. On a side note, employer consortia have also raised anti-trust concerns.

Political Views. Perception can, at times, be more powerful than reality. Fair or not, there is a very real impression among a goodly segment of the business community that apprenticeships are tied directly and formally to organized labor. As mentioned earlier, this is not the case.

Credentials. Some businesses are reluctant to embrace apprenticeship due to their traditional thinking on credentials, especially as it relates to higher education. Perhaps the real question to be asked, however, is whether or not all of the positions advertising the need for higher education credentials really, truly require them. Sometimes the answer is yes; more often it's no. For example, there is generally broad consensus that

health care professionals rightfully need to be credentialed, thus eliminating opportunity for those who do not have a post-secondary education. However, outside of a few exceptions like health care, most other industries generally do not have credentialing requirements. Many sectors within financial and business services, for example, fall into this category. Many of the companies in sectors like these could employ students right out of high school. Germany and its more than 400 apprenticed occupations has demonstrated the wide range of occupations to which apprenticeships can be applied. Moreover, the German government is striving to make apprenticeships even more relevant by offering new slots in other services and technology-based industries.

If fewer occupations in the U.S. require credentialing than are truly necessary (something strongly suggested given Germany's broad range of apprenticed occupations), the question is "why?". There are a number of possible explanations. At the industry level, it might be a means of regulating the entry or supply of labor into a particular field. At the firm level, it might be a recruitment screening mechanism. At any level, it might simply be a practice that has been maintained and never questioned. In any event, if apprenticeships are to be introduced on a broad occupational scale, credentialing practices will need to be seriously questioned and scrutinized.

This issue crosses stakeholder lines. It is also significant in that the education community is generally indifferent toward apprenticeship programs, though the stance may be more attitudinal than process oriented.

Educators

Though the education community does not by any means speak with one voice on this matter, it is viewed, by and large, as a major obstacle to wider implementation of apprenticeship in Washington. This is because the education community has traditionally related apprenticed occupations to blue-collar professions and credentialed occupations to white-collar professions. That apprenticeships have traditionally been marketed to non-college bound students would seem to reinforce this thinking.

Parents, for their part, tend to hold similar views. They, for the most part, regard apprenticeship training and apprenticeship certification as having a lesser standing than a classical education and formal academic credentials. As a result, they fear programs like apprenticeship will divert their children from the college track and, ultimately, close the door to the *American Dream* (this same thinking is proving to be a stumbling block of sorts for the School-to-Work program as well).

In actuality, that has not been the case. A study by the University of Wisconsin of that state's job training programs found that 75 percent of job training graduates have gone on to further education; university researchers also found that over 90 percent of current apprentices intend to do the same (*The Economist*, February 15, 1997). The reason? Students in job training programs are in a position to see that the best jobs go to people with higher education. This, of course, has also had the effect of causing employers to wonder if the apprentices they train (at great cost) will turn around and pursue something entirely different, like higher education credentials.

Still, the question must be asked, why aren't non-trade occupations better represented among apprenticeships given that there are no constraints. Part of that has been answered. In this vein, businesses and organized labor appear to hold some biases as well, though much less so.

Whatever the case, there is nevertheless a change underway in school districts across the county, much of it being revealed in the burgeoning School-to-Work movement. What started as a federal initiative is now being implemented by virtually every state as more and more educators are starting to question and challenge the longstanding practice of treating all students as potential college material. The statistical fact that only one out of four workers enters the labor market with a higher education degree would seem to buttress their position.

Some of this is currently playing out in Germany. The costs of unifying the country as well as other economic factors have been enormous. The problem is that the dual system is failing to respond to changes in the workplace, causing dissatisfaction among employers and a realization among students that they can increase their chances of getting a job through some other form of education.

Organized Labor

Organized labor has, of course, been a long-time proponent of apprenticeship programs. However, it even has concerns about the thrust of the debate over the direction of apprenticeships. Job training policy debates have given voice to a growing movement which argues that the "New Economy" (i.e., the workplace of the future) needs multi-skilled, cross-trained, flexible workers. That is, workers with high tech and other skills who are flexible enough to switch from one type of work to another, all while constantly upgrading those skills. These multi-skilled, cross-trained, flexible workers are currently more of a concept than a reality; there are few such workers being produced today despite pronouncements that they are the wave of the future. Nevertheless, proponents of the concept make a reasoned case that these kinds of workers—if they can be produced—help address problems ranging from labor and skill shortages to worker productivity.

The apprenticeship program as currently constituted does not produce this kind of worker, nor was it created to do so. Nevertheless, similar criticism is already being leveled against even the venerable German apprenticeship system. Critics argue that the German system is too rigid and focused on occupation-specific skills to the exclusion of flexible, basic skills needed to drive high-performance workplaces.

Despite its strong support for apprenticeships, the thrust of the "new worker" debate puts organized labor in an awkward position. It needs to be sensitive to its membership's desire to stick to a single trade or craft and not cross lines. As one carpenters' training coordinator put it: "Our members don't pull wire or operate backhoes." (*ENR*, June 9, 1997) However good the intentions of the "new worker" concept, it will not be easy for organized labor to overcome its strong identification with single trades or crafts and, by extension, specific skill sets.

At the same time, the concepts being put forth are consistent with the model of what is generally called open shop training. Open shop training, as the name implies, is non-union training. Moreover, it is geared toward producing multi-skilled swing workers who are at least minimally proficient in several trades. This is in contrast to certified apprentices who are highly proficient in a single trade. The problem with the open shop training concept, from labor's point of view, is that it flies in the face of the formal, highly structured apprenticeship system that is the hallmark of traditional organized labor. The non-union, multi-skilled swing worker has yet to firmly take root because employers are reluctant to invest in long term training that workers could use to get higher paying jobs with competitors, thus giving competitors a "free ride." With formal apprenticeships, collective bargaining is the leverage that eliminates "free riders" since all employers have to contribute to the training fund. Nevertheless, if open shop training improves, it may deepen distinctions between classic, single-craft union apprenticeship training and the open shop concept of the multi-skilled swing workers.

As work force training policy evolves, apprenticeship programs may find themselves forced to adapt as well. For example, Germany's future competitiveness will depend on whether the country can produce workers suited for the global economy—even if the apprenticeship program plays a diminished role.

Government

There are a number of reasons why business, education, and labor may not be ready to jump headfirst into apprenticeship programs. It is also true that state government has not given the WSATC or the Apprenticeship Program that oversee and regulate the program, respectively, the resources necessary to implement this limited, but effective, job training program on a broad scale. There are currently backlogs with respect to processing the apprenticeship applications that arrive for existing positions, let alone new ones. The principal charge of regional coordinators is to consult with employers interested in putting together apprenticeship programs. What little time that is left is directed toward promoting and marketing the concept of apprenticeship. Additionally, there are no government subsidies for apprenticeship training, unlike that for other job training programs (JTPA, dislocated workers, disabled veterans, vocational rehabilitation, etc.) which make them a more difficult sell with employers. For all of the reasons laid forth in the prior sections, this is not an

easy concept to sell. Apprenticeships run against traditional thinking and established practices in the business and education communities. Proposals have been forwarded to increase apprenticeship program staff responsible solely for promotion and marketing; however, it remains a challenge.

Making Apprenticeships Work

The case has been made that apprenticeships are a proven, effective, job training tool. The case has also been that non-craft professions can be successfully integrated into the apprenticeship system. The biggest question mark, however, is "how?". Here are some recommendations from those in the apprenticeship field:

- **Increase Staff.** Increase the number of Apprenticeship Program staff which, given a staff of seven in the main office and six in the regional offices, would enable staff to more effectively administer, do consultations, and promote the program. Additional staff would especially assist promotion and marketing activities, activities whose lacking has significantly affected the program's size and profile. Additional staff would also enable the program to continue aggressively recruiting women and ethnic minorities, two groups that are underrepresented among apprentices.

- **Educate Stakeholders**. Dispelling the myths and misconceptions held by the business and education communities (not to mention the general public) with respect to apprenticeships would break down stereotypes and convey the truly encompassing and comprehensive nature of the program.

- **Inter-Training Partnerships**. Partnerships with job training programs can provide employer incentives that enable employers to hire individuals into a state funded or subsidized job training positions within the context of an apprenticeship. For example, an employer gets funding from Department of Veterans Affairs to hire a disabled veteran into a formal Labor and Industries apprenticeship position.

- **Education Partnerships**. Partnering with the statewide School-to-Work program, especially through its pre-apprenticeship component, can provide momentum and exposure to expand into non-traditional and traditional fields alike as well as serve as a means of educating teachers and parents about the true nature of apprenticeship. Use the program as a platform to engage students directly. Furthermore, partner with school district officials and school administrators, most of whom endorse apprenticeship, to sell the concept of apprenticeship.

- **Business Partnerships.** Partner with the Association of Washington Business, a key player in the business community that has endorsed apprenticeship, to sell the concept to their members and businesses in general.

- **Break Status Quo**. Break the status quo by moving the apprenticeship program out of the "comfort zone" that has made it inefficiently limited to traditional trades and crafts, however effective that focus has been. The WSATC has gotten a start on this by directing apprenticeship staff to expand the program into high tech, biotech, health care, state and local government, and financial services.

- **Quantitative Analysis**. Labor market and other economic information can be used to statistically identify emerging occupational demand and skill gaps, thus making the program truly responsive to labor market demand and enabling program staff to aggressively seek out and collaborate with employers who have such occupations to establish apprenticeship programs. The apprenticeship program currently uses labor market information (affirmative action data) to measure its enrollment against state and county sex and race demographics.

None of these prescriptions, however, will work unless there is a fundamental change in the way that labor, business, education, and the public all perceive apprenticeships. These biases, though different, have combined to keep an effective job training tool from being implemented on a broad scale. Since attitudes tend to die hard, apprenticeships will likely remain a small part of the job training landscape. The School-to-Work initiative, however, which includes a pre-apprenticeship component, has brought work skills and training issues into the mainstream and in the process are focusing attention on apprenticeships in general. It probably offers the best opportunity to break stereotypes and old attitudes about apprenticeships and move them

into the mainstream. The addition of more FTEs to the Apprenticeship Program to focus specifically on promotion and marketing, if it materializes, would also help sell the concept of apprenticeship.

Untapped, Unrealized Potential

Washington has in its apprenticeship program a job training tool that works—and works well. However, the general perception of the program and its narrow application to date have led most observers to dismiss it as a practical solution to the state's labor and skill shortages. Until concerns are addressed, fears are calmed, and perceptions are changed, apprenticeships will remain a very effective job training tool whose application is limited to a very narrow segment of traditional craft and trade occupations. Its promise and potential as a job training strategy that can be implemented broadly in response to labor and skill shortages similar to those the state is currently experiencing will go unrealized. The key partners in the apprenticeship arena may be satisfied with the program as it exists—effective, exclusive. It is likely, however, that initiatives like School-to-Work with its emphasis on improving skills by more effectively linking education and work will impel—if not compel—proponents and opponents of apprenticeship programs alike to take a closer look at potential of this relatively untapped strategy. It is also possible that initiatives in the high technology industry tied to skill standards and workplace competencies will establish directions that enable the apprenticeship program to hook up with one of the state's hottest sectors.

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For additional labor market information, contact our

- *homepage at www.wa.gov/esd/lmea*
- *On-line database (WILMA) at www.wilma.org*
- *Labor Market Information Center (LMIC) at 1-800-215-1617*